

Science Flight Report

Operation Ice Bridge Spring 2010



UAF Alaska Flight No 3
Mission Plan: Glacier Bay

Flight Report Summary

Aircraft	DHC-3 Otter
Flight Number	UAF-3
Flight Request	10M014
Flight Hours	8.0
Take off time	08:00:00.00 Z from Ultima Thule Outfitters Lodge
Landing time	16:00:00.00 Z at Ultima Thule Outfitters Lodge
Date	Wednesday, May 26 2010, Day of Year 146
Purpose of Flight	LiDAR surveys of glaciers within Glacier Bay, SE Alaska.
Aircraft Status	Airworthy.
Sensor Status	operational.
Significant Issues	Unforecast winds aloft, 10-20 kts SE.
Accomplishments	<ul style="list-style-type: none"> • LiDAR centerline profiles of Carroll, Muir, Riggs, Casement, Brady, Lamplugh, Reid, Margerie, and Grand Plateau glaciers. • Conducted one pass over runway at Gustavus airport for LiDAR instrument calibration.
Planned Events	<ul style="list-style-type: none"> • This survey completes the spring 2010 UAF Alaska OIB flights.

Science Data Report Summary

This mission performed LiDAR surveys of glaciers within Glacier Bay, SE Alaska.

LiDAR data were collected at a height of 500-650 meters above the glacier surface, and mapped a 0.5 km wide swath along the centerline of the glaciers. This swath map consists of measurements from individual laser shot points on a roughly 1 meter by 1 meter grid. The individual point measurements of the glacier surface latitude, longitude and elevation have an accuracy of approximately ± 10 cm.

Geographic keywords: (Glacier Bay, SE Alaska)

Repeat Mission: yes (2009, 2005, 2000, 1995)

Instrument	Instrument Operational		Data Volume	Instrument Issues
	Target area	Entire Flight		
UAF LiDAR	Yes	No	1.25 GB in raw binary format	None
GPS	Yes	Yes	51 MB in raw binary format	None
IMU	Yes	Yes	303 MB in raw binary format	None

Mission Log (Chris Larsen)

Today's mission is a LiDAR survey of glaciers within Glacier Bay National Park.

The weather turned out to be windy and we encountered the conditions that were unexpected from the forecast. We did not perform any surveys on the lee side of the mountains (the Gulf of Alaska coast side of the Fairweather Range) due to lee side turbulence associated with this wind. On the luff side of the mountains the wind was steady with mild turbulence.

Individual instruments on board the aircraft:

LiDAR: The UAF LiDAR systems worked well.

GPS: System worked normally. No problems.

IMU: System worked well. No issues.



Figure 1: LiDAR ground tracks over Glacier Bay icefields.



Figure 2: Alsek Lake, and the termini of Alsek and Grand Plateau Glaciers. Cutting diagonally across the top center of the picture, the Fairweather Fault lies beneath the Grand Plateau Glacier and Desolation Valley in the distance. This fault trace is one of the world's greatest transform plate boundaries.



Figure 3: Pilot Paul Claus. In the distance, the Fairweather Range is showing clear signs of high winds aloft.

